General

Guideline Title

Influenza immunization for adult and pediatric patients undergoing cancer treatment.

Bibliographic Source(s)

Alberta Provincial Tumour Council. Influenza immunization for adult and pediatric patients undergoing cancer treatment. Edmonton (Alberta): CancerControl Alberta; 2013 Oct. 23 p. (Clinical practice guideline; no. SUPP-002). [78 references]

Guideline Status

This is the current release of the guideline.

This guideline updates a previous version: Alberta Provincial Tumour Council. Influenza immunization for adult and pediatric patients undergoing cancer treatment. Edmonton (Alberta): Alberta Health Services, Cancer Care; 2012 Oct. 22 p. (Clinical practice guideline; no. SUPP-002).

Recommendations

Major Recommendations

The following recommendations have been adapted from existing practice guidelines and consensus statements, including those from the 2013/2014 Alberta Health Services Immunization Program, Health Canada, the Public Health Agency of Canada, the Centers for Disease Control and Prevention, and the American Academy of Pediatrics. Evidence from published clinical trials, retrospective reviews, and case study reports was also reviewed and considered.

This guideline outlines the recommendations for influenza immunization among adult and pediatric patients with cancer. For the most current Alberta Health Services information, clinical guidelines, and schedules on influenza immunization for the general population, please refer to www.albertahealthservices.ca/influenza.asp .

Influenza Immunization: Adult Patients with Cancer

1. Annual administration of the inactivated influenza vaccine is indicated for all adult patients with cancer. Patients considered to be the highest priority are those on active treatment; the next priority group includes patients who have been treated within the past one year. Current recommendations do not support the administration of a second dose of vaccine in adults during the same influenza season (National Advisory Committee on Immunization [NACI], 2012; Alberta Health Services Immunization Program, 2013; Centers for Disease Control and Prevention [CDC], 2013).
2. The 2013/2014 trivalent influenza vaccine contains the following antigenic strains: A/California/7/2009 (H1N1) pdm09-like virus, A(H3N2) virus antigenically like the cell-propagated prototype virus A/Victoria/361/2011 (A/Texas/50/2012 viruses, which are antigenically like the

A/Victoria/361/2011, will be used in manufacturing the vaccine), and B/Massachusetts/2/2012-like virus (Yamagata lineage) (Alberta Health Services Immunization Program, 2013; CDC, 2013).

3. Age, type and duration of systemic therapy, and curative versus palliative treatment intent do not appear to influence the response of adult patients with cancer to the influenza immunization. Adult patients with hematologic malignancies may have lower responses to immunization when compared to adult patients with solid tumours.
4. Ideally, influenza vaccine should be given at least 10 to 14 days before the start of any immune-suppressing cancer treatment, to allow for sufficient antibody production by the patient. If the patient is actively receiving chemotherapy, the vaccine should be ideally administered when blood counts are near the normal range. If this is not possible, the patient can still be immunized during a course of chemotherapy or radiotherapy, based on individual clinical judgment incorporating a patient's overall clinical situation.
5. For adult patients undergoing blood and marrow transplant (BMT, autologous and allogeneic):
    a. The inactivated influenza vaccine should be administered at least 10 to 14 days prior to harvest (allogeneic donor), in the first half of the interval between mobilization chemotherapy and harvest (autologous recipient), or at least 10 to 14 days prior to transplant conditioning (allogeneic recipient). Live vaccines are contraindicated.
    b. Immune system recovery post-BMT is variable and requires physician assessment. Between 10% and 30% of BMT recipients will have a detectable antibody response to the influenza vaccine at 6 to 24 months post-transplant, while over 60% will have a detectable response at 24 months or more post-transplant.
    c. For hematopoietic stem cell transplant (HSCT) recipients, influenza vaccine should ideally be administered 6 months post-HSCT. Upon physician request only, influenza vaccine can be given as early as 4 months post-transplant; however, if given less than 6 months post-transplant a second dose can be given if there is ongoing circulation of influenza virus in the community.
    d. Close contacts of BMT patients should be strongly encouraged to be immunized annually against influenza (Government of Alberta, 2013; Ljungman et al., 2009)

    Immunization of family members and hospital or clinic staff who are in contact with adult patients with cancer is strongly recommended. In many cases, this may be more important than immunizing the patients themselves, as some patients may be less likely to respond to the vaccine. It is important for transplant recipients to know that people receiving the live nasal spray influenza vaccine virus can shed vaccine virus in small amounts which are generally below the levels needed to spread vaccine virus to others. In rare cases, vaccine virus can be spread from vaccine recipients to unimmunized people but is not likely to cause illness. However, it is recommended that anyone who has a severely weakened immune system (e.g., bone marrow transplant recipients requiring isolation) avoid contact with people who have received the live nasal spray influenza vaccine for a time period of two weeks.

6. Family members of and hospital staff working with severely immune suppressed individuals in a protected environment should receive the inactivated annual influenza vaccine.
7. Contraindications and precautions for influenza immunization in adult patients with cancer are:
    - A previous anaphylactic reaction to an influenza vaccine
    - A known hypersensitivity to any component of the vaccine
    - A history of severe oculo-respiratory syndrome that included lower respiratory symptoms within 24 hours of receiving the influenza vaccine, pending consultation with the Medical Officer of Health to review the risks and benefits of further immunization
    - A history of developing Guillain-Barré syndrome within 6 weeks of a previous dose of influenza vaccine
    - Individuals with severe acute febrile illness should not be immunized until the symptoms have resolved; individuals with mild-to-moderate febrile illness may be immunized
    - Egg-allergic individuals may be immunized using the inactivated annual influenza vaccine without prior influenza skin test and with the full dose of vaccine with the following conditions:
        a. Egg-allergic individuals who have experienced anaphylaxis with respiratory or cardiovascular symptoms should be immunized in a medical clinic, allergist's office or hospital where appropriate expertise and equipment to manage respiratory or cardiovascular compromise is present. These individuals should be kept under observation for 30 minutes.
        b. Egg-allergic individuals with mild reactions such as hives, or those who tolerate eggs in baked goods may be immunized in regular immunization clinics and should be kept under observation for 30 minutes following immunization.

Influenza Immunization: Pediatric Patients with Cancer

1. Annual administration of the inactivated influenza vaccine is indicated for all pediatric patients with cancer who are 6 months of age and older. Immunization with currently available influenza vaccines is not recommended for infants younger than 6 months of age. The recommended doses by age are as follows:
    - Children 9 years or older should receive one dose of influenza vaccine.
    - Previously unvaccinated children who are older than 6 months and less than 9 years of age require two doses of influenza vaccine in the first year they are immunized, with a minimum interval of 4 weeks between doses.

- A full dose of influenza vaccine should be used for all persons, including children 6 to 35 months of age, who are receiving influenza immunization.

2. Although the data is limited, age and type and duration of systemic therapy do not appear to influence the response of pediatric patients to influenza vaccine. Pediatric patients with hematologic malignancies may have lower responses to immunization when compared to pediatric patients with solid tumours.
3. Current recommendations for pediatric patients with cancer suggest that influenza vaccine should ideally be given at least 10 to 14 days before the start of the next round of chemotherapy, to allow the patient to develop a sufficient antibody response. If the patient is actively receiving chemotherapy or radiation treatment, the vaccine should be ideally administered when blood counts are near the normal range. If this is not possible, the patient can still be immunized during a course of chemotherapy or radiotherapy, based on individual clinical judgment incorporating a patient's overall clinical situation.
4. For pediatric patients undergoing BMT (autologous and allogeneic):
    a. Administer the inactivated influenza vaccine at least 10 to 14 days prior to harvest (allogeneic donor), in the first half of the interval between mobilization chemotherapy and harvest (autologous recipient), or at least 10 to 14 days prior to transplant conditioning (allogeneic recipient). The live nasal spray influenza vaccine is contraindicated.
    b. Immune system recovery post-BMT is variable and requires physician assessment. Between 10% and 30% of BMT recipients will have a detectable antibody response to the influenza vaccine at 6 to 24 months post-transplant, while over 60% will have a detectable response at 24 months or more post-transplant.
    c. For HSCT recipients influenza vaccine should ideally be administered 6 months post-HSCT. Upon physician request only influenza vaccine can be given as early as 4 months post-transplant, however, if given less than 6 months post-transplant a second dose can be given if there is ongoing circulation of influenza virus in the community.
    d. Close contacts of pediatric BMT patients should be strongly encouraged to be immunized annually against influenza.

    Annual influenza immunization of family members, out-of-home caregivers, and hospital or clinic staff in contact with pediatric patients with cancer is strongly recommended. In many cases, this may be more important than immunizing the patient themselves, as some patients may be less likely to respond to the vaccine. It is important for transplant recipients to know that people receiving the live nasal spray influenza vaccine virus can shed vaccine virus in small amounts which are generally below the levels needed to spread vaccine virus to others. In rare cases vaccine virus can be spread from vaccine recipients to unimmunized people but is not likely to cause illness. However, it is recommended that anyone who has a severely weakened immune system (e.g., bone marrow transplant recipients requiring isolation) avoid contact with people who have received the live nasal spray influenza vaccine for a time period of 2 weeks.

5. Contraindications and precautions for inactivated influenza immunizations in pediatric patients with cancer include:
    - Age less than 6 months
    - A previous anaphylactic reaction to an influenza vaccine
    - A known hypersensitivity to any component of the vaccine
    - A history of severe oculo-respiratory syndrome that included lower respiratory symptoms within 24 hours of receiving the influenza vaccine, pending consultation with the Medical Officer of Health to review the risks and benefits of further immunization
    - A history of developing Guillain-Barré syndrome within 6 weeks of a previous dose of influenza vaccine
    - Children with severe acute febrile illness should not be immunized until the symptoms have resolved; children with mild-to-moderate febrile illness may be immunized.
    - Egg-allergic children may be immunized using the inactivated annual influenza vaccine without a prior influenza skin test and with the full dose of vaccine with the following conditions:
        a. Egg-allergic children who have experienced anaphylaxis with respiratory or cardiovascular symptoms should be immunized in a medical clinic, allergist's office or hospital where appropriate expertise and equipment to manage respiratory or cardiovascular compromise is present. These individuals should be kept under observation for 30 minutes.
        b. Egg-allergic children with mild reactions such as hives, or those who tolerate eggs in baked goods may be immunized in regular immunization clinics and should be kept under observation for 30 minutes following immunization.
        c. Children who are to receive a second influenza vaccine dose during the same season can, if the first dose was tolerated well, be given a single dose of the same product; a graded process is not needed for the second dose.

Clinical Algorithm(s)

An algorithm titled "Decision Making Algorithm: Influenza Immunization for Patients with Cancer" is provided in the Clinician Factsheet (see the "Availability of Companion Documents" field).

Scope

Disease/Condition(s)

- Cancer (solid tumours or hematologic malignancies)
- Influenza

Guideline Category

Prevention

Clinical Specialty

Family Practice

Hematology

Infectious Diseases

Oncology

Pediatrics

Preventive Medicine

Intended Users

Advanced Practice Nurses

Nurses

Physician Assistants

Physicians

Public Health Departments

Guideline Objective(s)

To outline recommendations for influenza immunization among adult and pediatric patients with cancer

Target Population

- Children and adults with solid tumours or hematologic malignancies
- Family members, out-of-home caregivers, and hospital or clinic staff in contact with patients with cancer

Interventions and Practices Considered

Annual administration of the inactivated influenza vaccine

Major Outcomes Considered

- Influenza immunization response rates
- Seroprotection and seroconversion rates
- Case fatality rate
- Geometric mean titres
- Influenza and pneumonia rates
- Lower-respiratory tract infections
- Vaccine-related adverse events

Methodology

Methods Used to Collect/Select the Evidence

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

Research Questions

Specific research questions to be addressed by the guideline document were formulated by the guideline lead(s) and Knowledge Management (KM) Specialist using the PICO question format (Patient or Population, Intervention, Comparisons, Outcomes).

Guideline Questions

- What are the recommendations for influenza immunization for adult and pediatric patients with solid tumours or hematologic cancers in Alberta?
- What is the current evidence for response to the influenza vaccine among adult and pediatric patients with cancer receiving chemotherapy or other systemic therapy?
- What is the best timing for administering the influenza vaccine in relation to the therapy cycle?

Search Strategy

For the original guideline published in 2009, the MEDLINE, PubMed, Cochrane, CINAHL, and EMBASE databases were searched. The search included practice guidelines, systematic reviews, meta-analyses, randomized controlled trials, and clinical trials published between 1965 and October 2009. Websites from health organizations including the World Health Organization, Health Canada, the Public Health Agency of Canada, Alberta Health Services, Alberta Health and Wellness, the BC Cancer Agency, the National Comprehensive Cancer Network, the American Academy of Pediatrics, the Centers for Disease Control and Prevention, the National Guideline Clearinghouse, and the Département D'Oncologie Pédiatrique (France) were also searched for relevant guidance. The search terms for influenza immunization included: influenza vaccine or H1N1 vaccine AND neoplasms or radiotherapy or therapy or surgery or drug therapy. The search terms for immunocompromised patients included influenza vaccine or H1N1 vaccine AND cancer or oncology AND immunocompromise*.

For subsequent annual guideline updates, the PubMed and Cochrane databases were searched for publications limited to the previous one-year date range, using the search terms "cancer" OR "neoplasm" OR "oncology" AND "influenza vaccination" OR "H1N1" OR "H3N2" OR "influenza A" OR "influenza B".

Number of Source Documents

- The original search in 2009 yielded 41 relevant studies on influenza vaccine and 18 relevant studies on immunocompromised patients; 11 of these were included in the evidence tables presented in Appendix B of the original guideline document.
- The 2013 search yielded 6 relevant citations that have been added to the evidence tables presented in Appendix B in the original guideline document.

Methods Used to Assess the Quality and Strength of the Evidence

Not stated

Rating Scheme for the Strength of the Evidence

Not applicable

Methods Used to Analyze the Evidence

Review of Published Meta-Analyses

Systematic Review with Evidence Tables

Description of the Methods Used to Analyze the Evidence

Updated evidence was selected and reviewed by the working group and the Guideline Utilization Resource Unit (GURU). A detailed description of the methodology followed during the guideline development process can be found in the Guideline Utilization Resource Unit Handbook (see the "Availability of Companion Documents" field).

Evidence Tables

Evidence tables containing the first author, year of publication, patient group/stage of disease, methodology, and main outcomes of interest are assembled using the studies identified in the literature search. Existing guidelines on the topic are assessed by the KM Specialist using portions of the Appraisal of Guidelines Research and Evaluation (AGREE) II instrument (http://www.agreetrust.org) and those meeting the minimum requirements are included in the evidence document. Due to limited resources, GURU does not regularly employ the use of multiple reviewers to rank the level of evidence; rather, the methodology portion of the evidence table contains the pertinent information required for the reader to judge for himself the quality of the studies.

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations

Formulating Recommendations

The working group members formulated the guideline recommendations based on the evidence synthesized by the Knowledge Management (KM) Specialist during the planning process, blended with expert clinical interpretation of the evidence. As detailed in the Guideline Utilization Resource Unit Handbook (see the "Availability of Companion Documents" field), the working group members may decide to adopt the recommendations of another institution without any revisions, adapt the recommendations of another institution or institutions to better reflect local practices, or develop their own set of recommendations by adapting some, but not all, recommendations from different guidelines.

The degree to which a recommendation is based on expert opinion of the working group and/or the Provincial Tumour Team members is explicitly stated in the guideline recommendations. Similar to the American Society of Clinical Oncology (ASCO) methodology for formulating guideline recommendations, the Guideline Utilization Resource Unit (GURU) does not use formal rating schemes for describing the strength of the recommendations, but rather describes, in conventional and explicit language, the type and quality of the research and existing guidelines that were taken into consideration when formulating the recommendations.

Rating Scheme for the Strength of the Recommendations

Not applicable

Cost Analysis

A formal cost analysis was not performed and published cost analyses were not reviewed.

Method of Guideline Validation

Internal Peer Review

Description of Method of Guideline Validation

The 2013 update of this guideline was reviewed and endorsed by members the Alberta Provincial Tumour Council.

When the draft guideline document has been completed, revised, and reviewed by the Knowledge Management (KM) Specialist and the working group members, it will be sent to all members of the Provincial Tumour Team for review and comment. This step ensures that those intended to use the guideline have the opportunity to review the document and identify potential difficulties for implementation before the guideline is finalized. Depending on the size of the document, and the number of people it is sent to for review, a deadline of one to two weeks will usually be given to submit any feedback. Ideally, this review will occur prior to the annual Provincial Tumour Team meeting, and a discussion of the proposed edits will take place at the meeting. The working group members will then make final revisions to the document based on the received feedback, as appropriate. Once the guideline is finalized, it will be officially endorsed by the Provincial Tumour Team Lead and the Executive Director of Provincial Tumour Programs.

Evidence Supporting the Recommendations

References Supporting the Recommendations

Alberta Health Services Immunization Program. Influenza immunization clinical guidelines 2013/2014. Edmonton (Alberta): Alberta Health Services; 2013 Sep. 9 p.

Centers for Disease Control and Prevention (CDC). Prevention and control of seasonal influenza with vaccines. Recommendations of the Advisory Committee on Immunization Practices--United States, 2013-2014. MMWR Recomm Rep. 2013 Sep 20;62(RR-07):1-43. PubMed

Government of Alberta. Immunization for adult hematopoietic stem cell transplant recipients. Alberta (Canada): Government of Alberta; 2013 Jun.

Ljungman P, Cordonnier C, Einsele H, Englund J, Machado CM, Storek J, Small T, Center for International Blood and Marrow Transplant Research, National Marrow Donor Program, European Blood and Marrow Transplant Group, American Society of Blood and Marrow Transplantation, Canadian Blood and Marrow Transplant Group, Infectious Disease Society of America, Society for Healthcare Epidemiology of America, Association of Medical Microbiology and Infectious Diseases Canada, Centers for Disease Control and Prevention. Vaccination of hematopoietic cell transplant recipients. Bone Marrow Transplant. 2009 Oct;44(8):521-6. PubMed

National Advisory Committee on Immunization (NACI). Statement on seasonal influenza vaccine for 2012-2013. Can Commun Dis Rep. 2012 Aug;38(ACS-2):1-36.

Type of Evidence Supporting the Recommendations

The recommendations were adapted from existing guidance (see the "Adaptation" field).

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Appropriate influenza immunization for adult and pediatric patients undergoing cancer treatment

Potential Harms

- It is important for transplant recipients to know that people receiving the live nasal spray influenza vaccine virus can shed vaccine virus in small amounts which are generally below the levels needed to spread vaccine virus to others. In rare cases, vaccine virus can be spread from vaccine recipients to unimmunized people but is not likely to cause illness. However, it is recommended that anyone who has a severely weakened immune system (e.g., bone marrow transplant recipients requiring isolation) avoid contact with people who have received the live nasal spray influenza vaccine for a time period of 2 weeks.
- Egg-allergic individuals who have experienced anaphylaxis with respiratory or cardiovascular symptoms should be immunized in a medical clinic, allergist's office or hospital where appropriate expertise and equipment to manage respiratory or cardiovascular compromise is present. These individuals should be kept under observation for 30 minutes.
- Egg-allergic individuals with mild reactions such as hives, or those who tolerate eggs in baked goods, may be immunized in regular immunization clinics and should be kept under observation for 30 minutes following immunization.
- Patients with hematologic malignancies may have lower responses to immunization when compared to patients with solid tumours.

Contraindications

Contraindications

- Live influenza vaccines are contraindicated in adult undergoing blood and marrow transplant (BMT).
- The live nasal spray influenza vaccine is contraindicated in pediatric patients undergoing BMT.
- Contraindications and precautions for influenza immunization in adult patients with cancer are:
    - A previous anaphylactic reaction to an influenza vaccine
    - A known hypersensitivity to any component of the vaccine
    - A history of severe oculo-respiratory syndrome that included lower respiratory symptoms within 24 hours of receiving the influenza vaccine, pending consultation with the Medical Officer of Health to review the risks and benefits of further immunization
    - A history of developing Guillain-Barré syndrome within 6 weeks of a previous dose of influenza vaccine
    - Individuals with severe acute febrile illness should not be immunized until the symptoms have resolved.
- Contraindications and precautions for influenza immunization in pediatric patients with cancer are:
    - Age less than 6 months
    - A previous anaphylactic reaction to an influenza vaccine
    - A known hypersensitivity to any component of the vaccine
    - A history of severe oculo-respiratory syndrome that included lower respiratory symptoms within 24 hours of receiving the influenza vaccine, pending consultation with the Medical Officer of Health to review the risks and benefits of further immunization
    - A history of developing Guillain-Barré syndrome within 6 weeks of a previous dose of influenza vaccine
    - Children with severe acute febrile illness should not be immunized until the symptoms have resolved.

Qualifying Statements

Qualifying Statements

- The recommendations contained in this guideline are a consensus of members of the Alberta Provincial Tumour Council and members of the Alberta Health Services Province-wide Immunization Program Standards and Quality and represent a synthesis of currently accepted approaches to management, derived from a review of relevant scientific literature. Clinicians applying these guidelines should, in consultation

with the patient, use independent medical judgment in the context of individual clinical circumstances to direct care.

- In general, there is a paucity of evidence from well-controlled studies on influenza immunization in adult and pediatric patients with cancer. Articles included in this review repeatedly cite the need for universally accepted guidelines on: the types of vaccines that produce best immunologic response, the number of administrations, the timing of administration in relation to severity of immunosuppression, and the timing of administration in relation to chemotherapy schedules. The recommendations included in the current guidelines are based, in part, on data extrapolated from healthy populations and combined with the best practices and opinions of experts in Alberta.

Implementation of the Guideline

Description of Implementation Strategy

- Circulate the guideline internally to CancerControl Alberta staff.
- Post the guideline and accompanying tools on the Alberta Health Services website.
- Circulate the guideline and accompanying tools to nurses at immunization clinics throughout Alberta, as well as daycare units at the tertiary, associate, and community cancer centres in Alberta.

Implementation Tools

Clinical Algorithm

Resources

Wall Poster

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Living with Illness

Staying Healthy

IOM Domain

Effectiveness

Patient-centeredness

Identifying Information and Availability

Bibliographic Source(s)

Alberta Provincial Tumour Council. Influenza immunization for adult and pediatric patients undergoing cancer treatment. Edmonton (Alberta): CancerControl Alberta; 2013 Oct. 23 p. (Clinical practice guideline; no. SUPP-002). [78 references]

Adaptation

The recommendations were adapted from existing practice guidelines and consensus statements, including:

- Alberta Health Services Immunization Program. Influenza immunization clinical guidelines 2013/2014. September 2013. Available at: www.albertahealthservices.ca/Diseases/hi-dis-flu-clinical-guidelines.pdf.
- American Academy of Pediatrics. Policy Statement: Recommendations for the Prevention and Control of Influenza in Children, 2013-2014: http://pediatrics.aappublications.org/content/early/2013/08/28/peds.2013-2377.full.pdf+html.
- Centers for Disease Control and Prevention (CDC). Prevention and control of influenza with vaccines: recommendations of the Advisory Committee on Immunization Practices—(ACIP)—United States, 2013-14. MMWR Morb Mortal Wkly Rep. 2013 Sep;62 (RR07):1-43. Available at: www.cdc.gov/mmwr/preview/mmwrhtml/rr6207a1.htm?s_cid=rr6207a1_w.
- National Advisory Committee on Immunization (NACI). Statement on seasonal influenza vaccine for 2012-2013. Canada Communicable Disease Report. 2012 Aug;38(ACS-2). Available at: http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/12vol38/acs-dcc-2/index-eng.php.
- Government of Alberta. Immunization for adult hematopoietic stem cell transplant recipients. June 2013. Available at: www.health.alberta.ca/documents/Immunization-Hematopoietic-Transplants-Adult.pdf.

Date Released

2012 Oct (revised 2013 Oct)

Guideline Developer(s)

CancerControl Alberta - State/Local Government Agency [Non-U.S.]

Source(s) of Funding

CancerControl Alberta

There was no direct industry involvement in the development or dissemination of this guideline.

Guideline Committee

Alberta Provincial Tumour Council and Alberta Health Services Province-wide Immunization Program Standards and Quality, Communicable Disease Control

Composition of Group That Authored the Guideline

Not stated

Financial Disclosures/Conflicts of Interest

Participation of members of the Alberta Provincial Tumour Council in the development of this guideline has been voluntary and the authors have not been remunerated for their contributions. CancerControl Alberta recognizes that although industry support of research, education and other areas is necessary in order to advance patient care, such support may lead to potential conflicts of interest. Some members of the Alberta Provincial Tumour Council are involved in research funded by industry or have other such potential conflicts of interest. However the developers of this guideline are satisfied it was developed in an unbiased manner.

Guideline Status

This is the current release of the guideline.

This guideline updates a previous version: Alberta Provincial Tumour Council. Influenza immunization for adult and pediatric patients undergoing cancer treatment. Edmonton (Alberta): Alberta Health Services, Cancer Care; 2012 Oct. 22 p. (Clinical practice guideline; no. SUPP-002).

Guideline Availability

Electronic copies: Available in Portable Document Format (PDF) from the Alberta Health Services Web site .

Availability of Companion Documents

The following are available:

- Guideline utilization resource unit handbook. Edmonton (Alberta): CancerControl Alberta; 2013 Jan. 5 p. Electronic copies: Available in Portable Document Format (PDF) from the Alberta Health Services Web site .
- Clinician factsheet. Influenza immunization. Patients with cancer. Edmonton (Alberta): CancerControl Alberta. 2 p. Electronic copies: Available in PDF from the Alberta Health Services Web site .
- 8.5x11 poster: influenza immunization for adults with cancer and cancer survivors. Electronic copies: Available in PDF from the Alberta Health Services Web site .
- 11x17 poster: influenza immunization for adults with cancer and cancer survivors. Electronic copies: Available in PDF from the Alberta Health Services Web site .
- 8.5x11 poster: influenza immunization for hematopoietic stem cell transplant recipients. Electronic copies: Available in PDF from the Alberta Health Services Web site .
- 11x17 poster: influenza immunization for hematopoietic stem cell transplant recipients. Electronic copies: Available in PDF from the Alberta Health Services Web site .

Patient Resources

None available

NGC Status

This NGC summary was completed by ECRI Institute on December 19, 2012. The information was verified by the guideline developer on February 1, 2013. This summary was updated by ECRI Institute on April 30, 2014. The updated information was verified by the guideline developer on May 22, 2014.

Copyright Statement

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